

REMARKS/ARGUMENTS

Claims 10-27 are pending in this application. By this amendment, Applicant amends Claims 10 and 11.

Applicant appreciates the Examiner's indication that Claims 12, 14, 15, 17, 20, 22, 23, and 25 would be allowable if rewritten in independent form including all of the features of the base claim and any intervening claims.

Claims 10, 11, 16, 18 and 24 were rejected under 35 U.S.C. § 102(b) as being anticipated by Iida et al. (U.S. 6,747,525). Claims 10, 11, 13, 16, 18, 19, 21, 24, 26 and 27 were rejected under 35 U.S.C. § 102(b) as being anticipated by Chaturvedi et al. (U.S. 5,742,210). Applicant respectfully traverses the rejections of Claims 10, 11, 13, 16, 18, 19, 21, 24, 26 and 27.

Claim 10 has been amended to recite:

A directional coupler comprising:
a first dielectric layer;
a second dielectric layer; and
two line electrodes arranged on each of the first and second dielectric layers; wherein

the two line electrodes include a spiral-shaped or helical-shaped inner line electrode and a spiral-shaped or helical-shaped outer line electrode that surrounds the inner line electrode, as viewed from above, such that only some sections of the inner line electrode oppose some sections of the outer line electrode and remaining sections of the inner line electrode do not oppose remaining sections of the outer line electrode;

a first end of the inner line electrode arranged on the first dielectric layer and a first end of the inner line electrode arranged on the second dielectric layer are connected through a first via hole in the first dielectric layer;

a first end of the outer line electrode arranged on the first dielectric layer and a first end of the outer line electrode arranged on the second dielectric layer are connected through a second via hole in the first dielectric layer; and

corresponding currents are transmitted in the same direction through sections of the inner line electrode and the outer line electrode that are adjacent and substantially parallel to each other.

(emphasis added)

Applicant's Claim 11 recites features that are similar to the features recited in Applicant's Claim 10, including the above-emphasized feature.

With the unique combination and arrangement of features recited in Applicant's Claims 10 and 11, including the features of "the two line electrodes include a spiral-shaped or helical-shaped inner line electrode and a spiral-shaped or helical-shaped outer line electrode that surrounds the inner line electrode, as viewed from above, such that only some sections of the inner line electrode oppose some sections of the outer line electrode and remaining sections of the inner line electrode do not oppose remaining sections of the outer line electrode" and "corresponding currents are transmitted in the same direction through sections of the inner line electrode and the outer line electrode that are adjacent and substantially parallel to each other," Applicant has been able to provide a directional coupler in which inductive coupling between the inner line electrode and the outer line electrode is strong, and capacitive coupling between the inner line electrode and the outer line electrode is weak, thereby achieving high isolation (see, for example, paragraph [0014] of the Substitute Specification).

The Examiner alleged that each of Iida et al. and Chaturvedi et al. teaches all of the features recited in Applicant's Claims 10 and 11.

Applicant's Claim 10 has been amended to recite the feature of "the two line electrodes include a spiral-shaped or helical-shaped inner line electrode and a spiral-shaped or helical-shaped outer line electrode that surrounds the inner line electrode, as viewed from above, such that only some sections of the inner line electrode oppose some sections of the outer line electrode and remaining sections of the inner line electrode do not oppose remaining sections of the outer line electrode." Applicant's Claim 11 has been similarly amended. Support for this feature is found, for example, in paragraph [0042] of the Substitute Specification.

In contrast to Applicant's Claims 10 and 11, in each of Iida et al. and Chaturvedi

et al., the outer line electrode does not surround the inner line electrode, and instead, the outer line electrode is merely adjacent and parallel to the inner line electrode at all portions thereof. As a result of the arrangement of the inner and outer line electrodes of lida et al. and Chaturvedi et al., unlike the present invention, the directional couplers of lida et al. and Chaturvedi et al. have a problem in that inductive coupling between the inner and outer line electrodes is not sufficient because the capacitive coupling between the inner and outer line electrodes is very strong. Accordingly, the directional couplers of lida et al. and Chaturvedi et al. cannot achieve sufficiently high isolation.

Thus, lida et al. and Chaturvedi et al. certainly fail to teach or suggest the feature of “the two line electrodes include a spiral-shaped or helical-shaped inner line electrode and a spiral-shaped or helical-shaped outer line electrode that surrounds the inner line electrode, as viewed from above, such that only some sections of the inner line electrode oppose some sections of the outer line electrode and remaining sections of the inner line electrode do not oppose remaining sections of the outer line electrode” as recited in Applicant’s Claim 10, and similarly in Applicant’s Claim 11.

Accordingly, Applicant respectfully submits that lida et al. and Chaturvedi et al., applied alone or in combination, fail to teach or suggest the unique combination and arrangement of feature recited in Applicant’s Claims 10 and 11.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 10 and 11 under 35 U.S.C. § 102(b) as being anticipated by lida et al. and the rejection of Claims 10 and 11 under 35 U.S.C. § 102(b) as being anticipated by lida et al.

In view of the foregoing amendments and remarks, Applicant respectfully submits that Claims 10 and 11 are allowable. Claims 12-27 depend upon Claims 10 and 11, and are therefore allowable for at least the reasons that Claims 10 and 11 are allowable.

To the extent necessary, Applicant petitions the Commissioner for a One-Month Extension of Time, extending to April 2, 2009, the period for response to the Office

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Action dated December 2, 2008.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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